



MIV MODELING IN THE HERMEAN EXOSPHERE

V. Mangano (1,4), A. Milillo (1), S. Orsini (1), A. Mura (1), H. Lammer (2), P. Wurz (3)

(1)IFSI-INAF, Roma, ITALY, (2)IWF, Graz, AUSTRIA, (3)University of Bern, SWITZERLAND, (4)CISAS, University of Padova, ITALY

(valeria.mangano@ifsi.rm.cnr.it / fax: +39-06-49934383 phone: +39-06-49934386)

In the study of the Hermean exosphere, the process of gas production called ‘meteoritic impact vaporization’ (MIV) has been historically considered less important than the others (thermal desorption, photon stimulated desorption and ion sputtering). Only in the last years it has been considered that, in certain parts of the planet orbit, MIVs contribution to the exosphere is probably more substantial, and could also account for 30% of gas production.

In the frame of the next ESA mission BepiColombo to Mercury, and of the onboard SERENA package (neutral and ion detectors for analysing the hermean gaseous environment), the present work is intended to investigate the contribution to the hermean exosphere from the meteoritic process, in its widest size range.

By using a single particle model and the meteoritic size and velocity distributions at the position of Mercury as an input, we have obtained the density and the distribution function of the emitted neutral species.

In particular, for the case of an impulsive event, like MIV, the dynamical evolution of the gas cloud can be studied, and we can test if this distinct temporal signature can be detected at the altitude of the MPO/BC orbit with the SERENA instrumentation.